

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

**Murphy Oil U.S.A, Inc.
Meraux Refinery
Meraux, St. Bernard Parish, Louisiana
Agency Interest Number: 1238
Activity Number: PER20090002
Proposed Permits 2500-00001-V5**

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I. APPLICANT:

Company:

Murphy Oil U.S.A, Inc.
Meraux Refinery
2500 E. St. Bernard Highway
Meraux, Louisiana 70075

Facility:

Murphy Oil U.S.A, Inc. – Meraux Refinery
2500 E. St. Bernard Highway, Meraux, St. Bernard Parish, Louisiana
Approximate Latitude 29 degrees, 55 minutes, and 51 seconds
Longitude 89 degrees, 56 minutes, and 27 seconds
Zone 15

Responsible Official:

Mr. Lynn G. Bourgeois - Refinery Manager

II. FACILITY AND CURRENT PERMIT STATUS

Murphy Oil produces propane, motor gasoline, kerosene, diesel, No. 6 fuel oil, and other miscellaneous petroleum products. The refinery consists of Crude Distillation Unit, Vacuum Distillation Unit, Rose Unit, Hydrofluoric Acid Alkylation Unit, Hydrobon Unit, Platformer Unit, Amine Unit, Sulfur Recovery Units, Distillate Hydrotreating Unit, C3/C4 Splitter Unit, Middle Distillate Hydrotreating Unit, Merox Process, Sour Water Stripper Process, Liquid Petroleum Gas Recovery Unit, Fluid Catalytic Cracking Units, Wastewater Treatment System, and Steam Generation Unit.

The initial petroleum refining process separates crude oil into different fractions based upon its boiling point ranges. Light hydrocarbon fractions may undergo catalytic reforming to rearrange short chain hydrocarbon streams for use in gasoline blending. Heavier fractions may undergo catalytic cracking to break up the large hydrocarbon compounds into useful gasoline blending components. Various process streams are also treated to remove sulfur before further processing takes place. Petroleum refinery operations typically include auxiliary systems such as hydrogen production, wastewater treating, and steam production. For a detailed explanation of the processes see the proposed permit.

Murphy Oil was issued a Part 70 Operating Permit No. 2500-00001-V0 dated April 17, 2001 to expand it's operations as part of a "Clean Fuels" project. Part 70 Operating Permit

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No. 2500-00001-V1 dated February 8, 2002 allowed MOU to add a "No. 3 Sulfur Unit" as part of the "Clean Fuels" project to produce low sulfur gasoline with sulfur content less than 30 parts per million (ppm). This project was undertaken based on the promulgated final rule titled "Control of Air Pollution from New Motor Vehicles: Tier 2 Motor Vehicle Emission Standards and Gasoline Sulfur Control Requirements" (Tier 2 rule). This rule requires a reduction in sulfur content in gasoline.

Clean Fuels (Phase I) Project: The Phase I project with updates was approved under Part 70 Operating Permit No. 2500-0001-V2. The project netted out of a Prevention of Significant Deterioration (PSD) review. The following description provides the updated Phase I project and changes to the project: a) Removed SRU No. 1 and increased the capacity of SRU No. 2 with the addition of oxygen enrichment system; and b) Install a new SRU No. 4. **"Clean Fuels" Phase II Project:** This project included the associated changes to the facility to reduce sulfur concentration in the Ultra Low Sulfur Diesel product from 50 ppm to 10 ppm and was permitted under Part 70 Operating Permit No. 2500-00001-V2. The following description provides the details of Phase II project: a) Revamp the FCC to control excess oxygen in the regenerator; b) Increase the capacity of MDH unit in order to increase the production of elemental sulfur; c) Revamp the DHT unit in order to increase the production of elemental sulfur; and d) Increase storage capacity to accommodate the changes. The project NOx emissions increase was significant but netted out of PSD review.

"Clean Fuels" Phase I and II projects are being undertaken at this time.

In Permit 2500-00001-V2, along with the "Clean Fuels" updated Phase I and the Phase II project, MOU proposed to reconcile the following:

- 1) Update the tank storage based on operational flexibility;
- 2) Update fugitive emissions based on current component count and operations;
- 3) Reroute the Merox Off-Gas Knockout Pot stream from the No. 2 Alky Reboiler to the FCC Regenerator;
- 4) Reroute the hotwell vent gas stream from Vacuum Heaters East/West to the fuel gas system;
- 5) Incorporate a specific condition in order to have flexibility to add or remove fugitive emission piping and components;
- 6) Add a new asphaltene tank and route the emissions from this tank and the other two existing asphaltene tanks to an Asphaltene Tank Absorber;
- 7) Update all floating roof tank emissions to include the actual primary seals based on visual inspection;

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- 8) Update the General Condition XVII and Insignificant Activities list to reflect the current operating conditions;
- 9) Update the firing rate of heaters based on the vendor information and emissions based on stack test;
- 10) Incorporate the boiler permitted under Part 70 General Permit No. 3046-V0.
- 11) Update the tank inventory to achieve operational flexibility as shown in the table below TABLE A; and
- 12) Update CO emissions based on the updated U.S. EPA, AP-42 emissions factors.

Part 70 Operating Permit No. 2500-00001-V3 dated May 8, 2008 allowed the MOU to replace or reconstruct many tanks which were damaged beyond repair or required extensive repair based on the inspection done after Hurricane Katrina.

Permit No. 2500-00001-V4 dated January 15, 2009 allowed MOU to replace, reconstruct, or reinstate tanks (Emission Points 1-3A, 80-5A, 80-9, and 80-10A) based on the ongoing inspection of the tanks and to meet the storage capacity at the facility. These tanks were incorporated into the existing emission CAPs. There was no change in the existing emissions CAPs. The overall VOC emissions increase was 0.09 tons per year due to piping and fugitive components.

The facility is operating under the following permits:

<u>Permit No.</u>	<u>Units or Sources</u>	<u>Date Issued</u>
2500-00001-V4	TV Permit for the Facility	1/15/2009
3046-V0	TV General Permit for Boiler	11/09/2006
3029-V0	TV General Permit Tanks	03/31/2006

III. PROPOSED PERMIT / PROJECT INFORMATION

Proposed Permits

An application and Emission Inventory Questionnaires (EIQ), dated February 25, 2009 were submitted by Murphy Oil USA, Inc. to add a BenFree Unit at the facility. Additional information as of May 11, 2009 was also received.

Project description

The facility is now proposing to construct and operate a BenFree Unit (BFU) in order to comply with the USEPA Mobile Source Air Toxics (MSAT) Phase 2 final rule requirements finalized on February 26, 2007. This rule will limit the benzene content of the gasoline produced to an annual average of 0.62 percent by volume. The BFU will

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saturate benzene-rich reformat into cyclohexane rich gasoline. Reformate from the Catalytic Reformer (Platformer Unit) will enter the Reformate Splitter, which will be fired by a Reboiler. The Splitter will separate reformate into two streams. The heavy reformate (toluene and heavier) will be piped to gasoline storage tanks, while the light reformate will be routed to the Reactor. Benzene in the light reformate will be selectively saturated when the light reformate is mixed with hydrogen on a fixed catalyst bed in the Reactor. Finally the BenFree product will be blended with gasoline in storage tanks.

The BFU will receive feed directly from the Platformer Unit, and will operate only when the Platformer is in operation. The BFU is an additional control unit to the Platformer Unit, and will not result in any debottlenecking of any other units at the facility. Also, there will not be any pure benzene streams in the unit or in any storage tanks. The off gas from the BFU will be routed to fuel gas system. In an emergency the emissions from the BFU will be controlled by routing the vent to the existing North Flare via the Area 6 flare knockout drum. The BFU will comply with the NSPS, 40 CFR 60, Subpart QQQ and NESHAP, 40 CFR 61, Subpart FF. The BFU Reboiler will comply with NSPS, 40 CFR 60, Subpart J. The facility will voluntarily equip the BFU Reboiler with Ultra-low NOx burners and shall report its emissions under an exiting CAP for boilers, Emission Point CAP-Heaters.

MOU shall incorporate the fugitives associated with the BFU under the NSPS, 40 CFR 60, Subpart GGGa (refers to Subpart VVa) as appropriate. The BFU turnaround emissions shall also be included in the overall facility turnaround emissions.

In additions MOU is modifying the permit as shown below:

1. Update the Crude, Middle Distillate, Heavy Oil, and Slop Oil Tank CAPs which will result in a reduction of VOC emissions due to the replacement, reconstruction, or reinstatement of tanks approved in previous permits (2500-00001-V3 and V4);
2. Consolidation of Gasoline and Naphtha CAPs into one Gasoline/Naphtha CAP;
3. Update fugitive emissions associated with the tanks changes and the BFU Project;
4. Update the facility turnaround emissions to include the BFU project and the No. 2 Amine Unit;

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5. Cancellation of the rerouting of the Oily Water Stripper vent stream to the fuel gas system. The Oily Water Stripper vent stream shall continue to be routed to the North Flare, Emission Point 20-72;
6. Incorporate Boiler B-7 as permanent equipment in order to meet the steam demand at the facility;
7. Update the "Specific Requirements" and "Inventories" as appropriate; and
8. Updated Refinery Turnaround Emissions, Emission Point TRND, based on the planned turnarounds for the duration of this permit which expires on November 20, 2012

Estimated emission increases due to the BFU Project (Reboiler, Fugitives, Cooling Tower, North Flare, Storage, BFU turnaround and startup/shutdown, etc.) based on actual to potential in tons per year are shown in the following table:

<i>Pollutant</i>	<u>Actual Baseline Emissions</u>	<u>Post Project Emission</u>	<u>BFU Project Increase</u>	<u>PSD De Minimis</u>
PM ₁₀	2.30	4.34	2.04	15
SO ₂	2.10	28.95	26.85	40
NO _x	6.52	16.27	9.75	40
CO	35.48	58.73	23.25	100
VOC	16.09	52.98	36.89	40

Estimated emissions increases due to the project are insignificant. Therefore, PSD review (netting) is not required.

Permitted emissions from the Meraux Refinery in tons per year are as follows:

<u>Pollutant</u>	<u>Before</u>	<u>After</u>	<u>Change*</u>
PM ₁₀	206.40	206.86	+ 0.46
SO ₂	684.49	725.02	+ 40.53
NO _x	1220.06	1224.91	+ 4.85
CO	1960.70	2018.47	+ 57.77
VOC	600.30	637.52	+ 37.22

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* Includes emissions increase from the BFU project and refinery turnaround and startup/shutdown (5 years). The turnaround and startup/shutdown emissions, in the past, used to be permitted under variances. Including turnaround and startup/shutdown emissions in the permit will greatly assist in air quality planning by clearly identifying, quantifying, and limiting them where necessary. The turnaround and startup/shutdown emissions are not subject to New Source Review as they are existing emissions and no new modification is triggering an increase in the associated emissions. A specific condition has been introduced in this permit to limit the turnaround and startup/shutdown emissions, Emission Point TRND.

IV. *REGULATORY ANALYSIS*

The applicability of the appropriate regulations is straightforward and is provided in the Facility Specific Requirements Section of the proposed permits. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms conditions and standards are provided in the Facility Specific Requirements Section of the proposed permits.

National Emission Standards for Hazardous Air Pollutants: NESHAP From Benzene Waste Operations (BWON)

The facility generates a total annual benzene (TAB) quantity of 10 megagrams per year or greater. The facility elects to take the 6 megagrams per year option as per the requirements of 40 CFR 61.342(e) where the total uncontrolled benzene quantity for the wastes shall not be greater than 6 megagrams per year.

National Emission Standards for Hazardous Air Pollutants: NESHAP From Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units

This regulation is also known as Refinery MACT II. The facility will comply with this regulation for the new Sulfur Recovery Unit, No. 3/4 SRU. NESHAP, Subpart UUU, 40 CFR 63.1568(a)(1) states that if a unit is subject to NSPS, Subpart J, 40 CFR 60.104(a)(2) and uses an oxidation or reduction control system followed by an incinerator that unit can select to comply with the requirements of NSPS, Subpart J. the facility shall comply with the requirements of Subpart J for all the sulfur recovery units.

National Emission Standards for Hazardous Air Pollutants: NESHAP From Petroleum Refineries

The units contain tanks that receive maintenance wastewater and wastewater streams that are subject to the wastewater provisions of RMACT. When determining whether a tank must comply with the storage vessel provisions or the wastewater provisions of the RMACT, the function of the tank (whether the tank stores a waste or a product for use or

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reuse) is used as the basis of the determination. As defined in RMACT Subpart CC, a wastewater tank is not a storage vessel. Notably, Group 2 wastewater tanks are not subject to any control, monitoring, recordkeeping, or reporting requirements under RMACT.

National Emission Standards for Hazardous Air Pollutants: NESHAP From Petroleum Refineries

The petroleum refining process unit that contains or contacts one or more of the HAPs listed in Table 1 of Subpart CC is potentially subject to RMACT. Leaks from equipment in organic HAP service that are located in a petroleum refining process unit are subject to RMACT. Equipment in organic HAP service in the WWTP Area is subject to the RMACT. CRLLC demonstrates compliance with this rule by complying with the provisions of 40 CFR 63.648. A process wastewater stream in a petroleum refining process unit that contains one or more of the HAPs listed in Table 1 of Subpart CC are potentially subject to RMACT. The WWTP receives process wastewater streams and, therefore, the wastewater provisions of the RMACT are applicable to the WWTP Area.

The equipment leak provisions of Subpart CC apply to all equipment that operates in organic HAP service. Equipment includes all pumps, compressors, pressure relief devices, sampling connections, open-ended valves or lines, valves, flanges and other connectors, product accumulator vessels, and control devices, or systems required by Subpart CC. However, there are no fugitive components within the WWTP Area in organic HAP service. Therefore, the WWTP Area is not subject to the equipment leak provisions of this rule.

Prevention of Significant Deterioration Applicability

The emissions increases from the BFU Project are insignificant. Prevention of Significant Deterioration review is not required.

Air Modeling Analysis

Emissions associated with the proposed modification were reviewed by the Air Quality Assessment Division to ensure compliance with the NAAQS and AAS. LDEQ did not require the applicant to model emissions.

Comprehensive Toxic Air Pollutant Control Program-Chapter 51

Toxic air pollutant emissions from fugitives must be controlled to a degree that constitutes MACT. The units comply with all applicable provisions of the Louisiana Air Toxics Program.

Maximum Achievable Control Technology (MACT) requirements

The Louisiana Air Toxics Program (LA MACT) requires a major source emitting any

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Class I or II pollutant at a rate that exceeds the minimum emission rate for that pollutant to demonstrate compliance with the Maximum Achievable Control Technology (MACT) standards. Additionally, the Louisiana Air Toxics Program requires a major source emitting any Class I, II, or III toxic air pollutant greater than the minimum emission rate for that pollutant to determine its status of compliance with the applicable ambient air standard (AAS) defined for the pollutant.

The requirements of the LA MACT apply to the storage tanks and to the units as a whole. Chalmette Refining demonstrates compliance with the LA MACT requirements by complying with the most stringent applicable federal or state air toxics regulations.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to Section VIII of the proposed Part 70 permits.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the proposed Part 70 permits.

V. *PERMIT SHIELDS*

A permit shield was not requested.

VI. *PERIODIC MONITORING*

The Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the proposed permits.

VII. *APPLICABILITY AND EXEMPTIONS OF SELECTED SUBJECT ITEMS*

See Proposed Permits.

VIII. *STREAMLINED REQUIREMENTS*

These proposed permits do not include any streamlined requirements.

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IX. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

New Source Review (NSR) - A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM₁₀- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting

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program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

RACT – Refinery Maximum Achievable Control Technology

Sulfur Dioxide (SO₂) – An oxide of sulfur.

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.